CENTERS FOR DISEASE CONTROL

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MORBIDITY AND MORTALITY WEEKLY REPORT



## Delta Hepatitis — Massachusetts

An outbreak of hepatitis B (HB) that began in September 1983 is continuing in Worcester, Massachusetts, primarily involving parenteral drug abusers (PDAs) and their sexual contacts. As of August 1, 1984, 75 cases of acute HB have been identified, 50 of which are considered outbreak-related. Fulminant hepatitis has been a prominent feature of this outbreak. Six deaths have occurred, for an outbreak-related case fatality ratio of 12%.

Patients meeting all the following criteria were considered outbreak-related HB cases: (1) an acute clinical illness compatible with HB; (2) elevated serum glutamic-oxaloacetic transaminase (SGOT) or serum glutamic-pyruvic transaminase (SGPT) two or more times greater than the upper limit of normal (when such results were available); (3) positive serology for hepatitis B surface antigen (HBsAg); (4) residence and/or primary diagnosis and treatment within the city of Worcester; and (5) a PDA or a direct contact of a PDA.

Patients with acute HB who could be located were interviewed regarding their drug and alcohol use, as well as risk factors for HB. Serum samples were obtained to test for markers of hepatitis B virus (HBV) infection and delta virus infection.

Of the 50 outbreak-related case patients, 35 were male. Twenty-nine were white, non-Hispanic; 17 were Hispanic; two were black; and two were of unknown race. Ages ranged from 15 years to 43 years (median 25 years). Forty-three patients used needles; six were sexual contacts of PDAs; and one had direct contact with open wounds of a person with hepatitis. Of the six patients who died, three were male; five were white, non-Hispanic, and one was Hispanic. Ages ranged from 19 years to 34 years of age (median 27 years). Five were PDAs, and one was a sexual contact of a known PDA.

Drugs that were self-injected were primarily heroin and cocaine. No 3,4-methylene diamphetamine (MDA), a drug implicated in fulminant HB/PDA deaths in North Carolina in 1979, was used (*1*). The only potential hepatotoxin identified was alcohol.

Testing for HB markers confirmed HB in all cases. Serum specimens were available from four patients who died; three had immunoglobulin M (IgM) anti-delta virus antibodies. IgM anti-delta virus antibodies were also present in four of 22 PDAs with nonfulminant acute HB, one of seven PDA contacts with nonfulminant acute HB, and none of 11 nonoutbreak-related patients with acute HB. In addition, two of 13 non-ill HBsAg-positive PDAs had serologic markers of delta virus infection (one with IgG antibodies and one with IgM).

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**Editorial Note:** Previous clusters of fulminant HB deaths among PDAs have been reported in this country (*1,2*); however, this is the first outbreak of fulminant HB in the United States in which the delta virus has clearly been shown to have contributed to the severity of the illness.

*Hepatitis – Continued*

Delta virus is composed of a protein antigen (delta antigen) and a ribonucleic acid of low molecular weight. Although transmissible as an independent infectious agent, delta virus can only infect and cause illness in the presence of active HBV infection. To be infectious, this incomplete virus requires a coat of HBsAg (*3*). Delta virus and HBV may simultaneously infect a host (coprimary infection with HBV/delta virus), or delta virus may superinfect an existing HBV carrier. Either coprimary infection or superinfection may cause acute hepatitis; both types of infection have been associated with fulminant HB in Europe (*4*).

Delta virus infection is endemic in southern Italy. Based on limited serosurveys, it has also been found in the Middle East and in certain parts of South America and Western Africa. Superinfection with delta virus was implicated as the major cause of an exceptionally severe hepatitis epidemic among Venezuelan Indians in which 34 of 149 patients died (*5*). Delta virus infection has been limited to hemophilia patients and PDA populations in the rest of Western Europe, North America, and Australia (*7,8*). Fulminant coprimary HBV/delta virus infections among PDAs have occurred sporadically in Los Angeles (*6*).

Although delta virus is transmitted in a manner similar to HBV, to date, delta virus infection has not been reported in this country in health-care workers or male homosexuals, the other major groups at risk for HB. Because delta virus infections have never been found in the absence of infection with HBV, there appears to be little risk of spread outside of groups known to be at risk of acquiring HB. Testing for delta virus is indicated in the setting of fulminant HB infection or acute hepatitis occurring in a known HB carrier.

Control of HB outbreaks among PDAs is difficult. Efforts to control the current outbreak have focused on educating PDAs on the modes of transmission of HB and on updating physicians regarding serodiagnosis and reporting of HB and recommended prophylaxis of needle, sexual, and familial contacts of patients (*9*). Since HB vaccine will prevent both HB and delta virus infections, a program to vaccinate PDAs in Worcester is currently under development as a control measure.

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## Outbreak of Diarrhea Linked to Dietetic Candies — New Hampshire

A 13-year-old girl was treated at a Milford, New Hampshire, hospital emergency room April 30, 1984, for acute abdominal pain and diarrhea. Induced vomiting yielded partially digested pieces of a hard candy. The New Hampshire Poison Center notified the Epidemiology Office, New Hampshire Division of Public Health Services, that candy possibly caused the illness.

Investigation disclosed that, earlier that day, eight neighborhood playmates, ages 5-13 years (mean 9 years), had experienced abdominal cramps, urgency in defecation, and two to

*Diarrhea — Continued*

six loose bowel movements each, ½ to 1½ hours after eating three to 16 pieces of a dietetic candy per child. There was no known common exposure to other food, drink, or toxic substance. Only the 13-year-old girl received medical attention; the other seven children recovered spontaneously within 2-3 hours after the illness began. Each of three additional playmates who ate one piece of candy and four who ate no candy did not become ill. The attack rate for children who had eaten any of the candy was 8/12 (67%); it was 8/9 (89%) for children who had eaten three or more pieces.

The candies, purchased locally, had been manufactured in Pennsylvania and are one of a number of dietetic candy products distributed widely for the past 6 years to retailers throughout the United States and to countries overseas. The candies in this outbreak each contained approximately 3 grams of sorbitol as a sweetener. Sorbitol, a hexahydric sugar alcohol, acts as an osmotic laxative. The candies were purchased in bulk and individually wrapped. The wrappers carried no ingredient information and no warning of adverse effects if eaten in excess. A survey of a number of sorbitol-containing dietetic products on the market in New Hampshire revealed instances of inadequate and inaccurate labeling.

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**Editorial Note:** Sorbitol has been responsible for both acute and chronic diarrheal illnesses in adults and children (*1-3*). In a normal adult, after a 35-gram oral dose, levels of sorbitol in blood remain undetectable, and serum glucose remains unchanged (*4*). Ingestion of 10 grams of sorbitol caused bloating and flatulance in most of seven volunteers in one study. Twenty grams caused more severe symptons of cramping and diarrhea (*5*). In children, the dose of sorbitol required to produce gastrointestinal symptoms is markedly less than in adults. Sorbitol ingestion has not been associated with harmful effects other than diarrhea and gastrointestinal discomfort. In unexplained cases of acute or chronic diarrhea, a careful dietary history should be obtained, with careful attention to the possible ingestion of sorbitol.

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## Measles — United States, First 26 Weeks, 1984

During the first 26 weeks of 1984, a provisional total of 1,759 measles cases was reported in the United States (incidence rate 0.8 per 100,000 population) (Figure 1). This represents a 60.6% increase from the 1,095 cases reported during the same period in 1983 (0.5/100,000). A total of 1,234 cases (70.2%) was reported from four states—Michigan (430), Texas (377), California (267), and Illinois (160). Nine states (New Mexico, Michigan, Hawaii, New Hampshire, Texas, Washington, Utah, Illinois, California) and New York City had incidence rates of 1/100,000 population or higher.

Although the overall incidence rate increased, the number of states reporting measles decreased during the first 26 weeks of 1984, compared with the same period of 1983. Twenty-four states reported no measles cases (indigenous or imported), compared with 22 states and the District of Columbia during the same period in 1983. In 1984, 80 (2.5%) of the nation's

*Measles — Continued*

3,139 counties reported measles cases during the first 26 weeks, compared with 95 (3.0%) during the same period in 1983 (Table 1).

One hundred seventy-five cases (9.9%) were associated with international or out-of-state importations—an average of 6.7 cases per week—compared with 174 cases during the same period in 1983 (*1*).

During the first 26 weeks, detailed information was provided to the Division of Immunization, CDC, on 1,765 cases. The difference between this number and the 1,759 cases reported to the *MMWR* reflect delays in reporting. Of 1,765 cases, 1,723 (97.6%) met the standard clinical case definition for measles,* and 721 (40.8%) were serologically confirmed.

Among most of the measles patients, onset of rash occurred from week 9 through week 15, peaking at week 11 (130 cases) (Figure 2).

Age characteristics of reported cases changed from 1983 to 1984 (Table 2). In 1983, the highest incidence rates were reported for preschoolers. In contrast, the rates for the first 26 weeks of 1984 were greatest for children 10 years to 14 years of age who experienced a more than twofold increase in incidence rates, compared with all of 1983. Of the 351 preschoolers who had measles in 1984, 92 (26.2%) were under 12 months of age; 68 (19.4%)

*Fever (38.3 C [101 F] or higher, if measured), generalized rash of 3 days' or longer duration, and at least one of the following: cough, coryza, conjunctivitis.

*(Continued on page 501)*

**TABLE I. Summary—cases of specified notifiable diseases, United States**

| Disease | 35th Week Ending | | | Cumulative, 35th Week Ending | | |
|---|---|---|---|---|---|---|
| | Sept. 1, 1984 | Sept. 3, 1983 | Median 1979-1983 | Sept. 1, 1984 | Sept. 3, 1983 | Median 1979-1983 |
| Acquired Immunodeficiency Syndrome (AIDS) | 106 | N | N | 2,748 | N | N |
| Aseptic meningitis | 250 | 741 | 471 | 4,140 | 8,593 | 4,967 |
| Encephalitis: Primary (arthropod-borne & unspec.) | 18 | 109 | 80 | 839 | 1,042 | 811 |
| Post-infectious | 1 | 1 | 1 | 67 | 66 | 66 |
| Gonorrhea: Civilian | 14,604 | 16,343 | 20,619 | 548,769 | 597,452 | 658,232 |
| Military | 280 | 308 | 621 | 14,108 | 16,161 | 18,272 |
| Hepatitis: Type A | 216 | 402 | 460 | 13,714 | 13,961 | 16,907 |
| Type B | 318 | 472 | 402 | 16,633 | 15,879 | 13,586 |
| Non A, Non B | 32 | 54 | N | 2,430 | 2,278 | N |
| Unspecified | 79 | 103 | 206 | 3,927 | 4,765 | 6,731 |
| Legionellosis | 15 | 11 | N | 381 | 474 | N |
| Leprosy | 6 | 6 | 5 | 147 | 169 | 142 |
| Malaria | 11 | 12 | 27 | 589 | 520 | 728 |
| Measles: Total* | 24 | 1 | 10 | 2,203 | 1,206 | 2,523 |
| Indigenous | 23 | 1 | N | 1,950 | 1,002 | N |
| Imported | 1 | - | N | 253 | 204 | N |
| Meningococcal infections: Total | 30 | 25 | 32 | 1,962 | 1,986 | 1,956 |
| Civilian | 30 | 25 | 32 | 1,957 | 1,971 | 1,971 |
| Military | - | - | - | 5 | 15 | 14 |
| Mumps | 28 | 25 | 30 | 2,163 | 2,407 | 4,183 |
| Pertussis | 14 | 69 | 36 | 1,276 | 1,525 | 995 |
| Rubella (German measles) | 27 | 7 | 17 | 535 | 758 | 1,963 |
| Syphilis (Primary & Secondary): Civilian | 507 | 574 | 574 | 18,521 | 21,734 | 20,357 |
| Military | 4 | 6 | 9 | 223 | 276 | 250 |
| Toxic Shock syndrome | 2 | 4 | N | 289 | 297 | N |
| Tuberculosis | 332 | 449 | 520 | 14,107 | 15,598 | 17,941 |
| Tularemia | 5 | 11 | 10 | 213 | 204 | 163 |
| Typhoid fever | 5 | 16 | 14 | 206 | 273 | 310 |
| Typhus fever, tick-borne (RMSF) | 37 | 45 | 44 | 626 | 904 | 886 |
| Rabies, animal | 86 | 128 | 124 | 3,493 | 4,332 | 4,332 |

**TABLE II. Notifiable diseases of low frequency, United States**

| | Cum. 1984 | | Cum. 1984 |
|---|---|---|---|
| Anthrax | 1 | Plague | 17 |
| Botulism: Foodborne | 7 | Poliomyelitis: Total | 2 |
| Infant | 65 | Paralytic | 2 |
| Other | 5 | Psittacosis | 57 |
| Brucellosis (N.C. 1, Tex. 1) | 73 | Rabies, human | 1 |
| Cholera | - | Tetanus (Tex. 1) | 40 |
| Congenital rubella syndrome | 3 | Trichinosis | 59 |
| Diphtheria | - | Typhus fever, flea-borne (endemic, murine) | 15 |
| Leptospirosis | 13 | | |

*There were no cases of internationally imported measles reported for this week.

## TABLE III. Cases of specified notifiable diseases, United States, weeks ending September 1, 1984 and September 3, 1983 (35th Week)

| Reporting Area | AIDS | Aseptic Meningitis | Encephalitis | | Gonorrhea (Civilian) | | Hepatitis (Viral), by type | | | | Legionellosis | Leprosy |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Primary | Post-infectious | | | A | B | NA,NB | Unspecified | | |
| | Cum. 1984 | 1984 | Cum. 1984 | Cum. 1984 | Cum. 1984 | Cum. 1983 | 1984 | 1984 | 1984 | 1984 | 1984 | Cum. 1984 |
| UNITED STATES | 2,748 | 250 | 639 | 67 | 548,769 | 597,452 | 216 | 318 | 32 | 78 | 15 | 147 |
| NEW ENGLAND | 93 | 22 | 35 | 1 | 15,629 | 15,187 | 4 | 11 | 1 | 20 | - | 7 |
| Maine | - | 2 | - | - | 648 | 749 | - | 1 | - | - | - | - |
| N.H. | 1 | 9 | 5 | - | 441 | 483 | - | 2 | - | - | - | - |
| Vt. | - | 2 | 3 | - | 250 | 291 | 2 | 1 | - | - | - | - |
| Mass. | 51 | 5 | 19 | - | 6,427 | 6,535 | 2 | 4 | - | 20 | - | 5 |
| R.I. | 6 | - | - | - | 1,080 | 822 | - | 2 | - | - | - | 2 |
| Conn. | 35 | 4 | 8 | 1 | 6,783 | 6,307 | - | 1 | 1 | - | - | - |
| MID ATLANTIC | 1,207 | 67 | 82 | 8 | 74,785 | 75,994 | 29 | 83 | 3 | 12 | - | 30 |
| Upstate N.Y. | 115 | 37 | 30 | 5 | 11,633 | 12,269 | 2 | 20 | 1 | 4 | - | 2 |
| N.Y. City | 865 | 9 | 4 | - | 31,319 | 30,528 | 20 | 54 | - | 3 | - | 28 |
| N.J. | 166 | 21 | 23 | - | 12,554 | 13,968 | 7 | 9 | 2 | 5 | - | - |
| Pa. | 61 | U | 25 | 3 | 19,279 | 19,229 | U | U | U | U | U | - |
| E.N. CENTRAL | 120 | 42 | 163 | 17 | 76,583 | 86,003 | 23 | 32 | 1 | 1 | 6 | 6 |
| Ohio | 15 | 20 | 49 | 9 | 19,879 | 22,156 | 9 | 11 | - | - | 4 | 2 |
| Ind. | 16 | 3 | 35 | - | 8,410 | 8,737 | 2 | 2 | - | - | - | - |
| Ill. | 63 | 1 | 19 | 6 | 17,425 | 24,468 | 7 | 4 | 1 | 1 | 1 | 2 |
| Mich. | 16 | 18 | 39 | - | 22,328 | 23,180 | 5 | 15 | - | - | 1 | 2 |
| Wis. | 10 | - | 21 | 2 | 8,541 | 7,462 | - | - | - | - | - | - |
| W.N. CENTRAL | 26 | 11 | 51 | 1 | 27,120 | 28,250 | 10 | 30 | 1 | - | - | 1 |
| Minn. | 7 | - | 20 | - | 4,048 | 3,888 | 1 | 3 | 1 | - | - | - |
| Iowa | 1 | 5 | 20 | - | 2,938 | 3,062 | 1 | 2 | - | - | - | 1 |
| Mo. | 13 | 3 | 7 | - | 13,132 | 13,988 | 2 | 19 | - | - | - | - |
| N. Dak. | - | - | - | - | 260 | 288 | - | - | - | - | - | - |
| S. Dak. | - | - | - | 1 | 625 | 746 | 3 | 1 | - | - | - | - |
| Nebr. | 2 | 1 | 1 | - | 1,940 | 1,802 | - | - | - | - | - | - |
| Kans. | 3 | 2 | 3 | - | 4,177 | 4,456 | 3 | 5 | - | - | - | - |
| S. ATLANTIC | 397 | 49 | 96 | 15 | 139,840 | 154,409 | 19 | 83 | 7 | 6 | 7 | 6 |
| Del. | 4 | - | 1 | - | 2,538 | 2,764 | 1 | 1 | - | - | 4 | - |
| Md. | 28 | 8 | 23 | - | 15,689 | 19,886 | - | 17 | 2 | - | - | - |
| D.C. | 62 | 2 | - | - | 10,166 | 10,609 | 1 | 1 | - | - | 1 | 1 |
| Va. | 23 | 16 | 22 | 5 | 13,435 | 13,810 | 3 | 9 | 1 | - | - | 4 |
| W. Va. | 4 | 2 | 7 | - | 1,650 | 1,803 | - | 2 | - | - | - | - |
| N.C. | 9 | 11 | 20 | 7 | 22,824 | 23,673 | 3 | 13 | 1 | 3 | 1 | - |
| S.C. | 6 | 1 | 4 | - | 14,236 | 14,666 | - | 17 | - | - | 1 | - |
| Ga. | 39 | - | 2 | 1 | 25,575 | 30,946 | - | - | - | - | - | - |
| Fla. | 222 | 9 | 17 | 2 | 33,727 | 36,452 | 11 | 23 | 3 | 3 | - | 1 |
| E.S. CENTRAL | 20 | 9 | 33 | 6 | 47,955 | 49,644 | 14 | 35 | 4 | 4 | - | - |
| Ky. | 9 | 8 | 6 | - | 5,871 | 5,839 | 10 | 2 | - | - | - | - |
| Tenn. | 5 | 1 | 9 | 1 | 20,105 | 20,773 | 3 | 26 | 1 | 4 | - | - |
| Ala. | 4 | - | 16 | 5 | 14,622 | 14,952 | 1 | 5 | 3 | - | - | - |
| Miss. | 2 | - | 2 | - | 7,357 | 8,080 | - | 2 | - | - | - | - |
| W.S. CENTRAL | 181 | 32 | 44 | 4 | 75,247 | 84,126 | 66 | 29 | 13 | 31 | - | 16 |
| Ark. | 1 | - | - | 2 | 6,567 | 6,553 | 3 | 3 | - | 2 | - | 1 |
| La. | 24 | 4 | 6 | - | 16,862 | 15,849 | 9 | 4 | 7 | 2 | - | 1 |
| Okla. | 6 | 4 | 14 | 1 | 8,261 | 9,792 | 5 | 1 | 1 | - | - | - |
| Tex. | 150 | 24 | 24 | 1 | 43,557 | 51,932 | 49 | 21 | 5 | 27 | - | 14 |
| MOUNTAIN | 43 | 13 | 21 | 7 | 17,616 | 19,000 | 45 | 13 | - | 4 | 1 | 7 |
| Mont. | - | - | - | - | 745 | 795 | 15 | - | - | - | - | - |
| Idaho | - | 2 | - | - | 882 | 807 | 3 | 5 | - | - | - | - |
| Wyo. | 1 | - | - | - | 495 | 494 | - | - | - | - | - | - |
| Colo. | 25 | 6 | 7 | - | 5,075 | 5,331 | 13 | 7 | - | 4 | - | - |
| N. Mex. | - | - | - | - | 2,130 | 2,354 | 2 | 1 | - | - | 1 | - |
| Ariz. | 9 | U | 7 | 3 | 4,591 | 5,412 | U | U | U | U | U | 5 |
| Utah | 3 | 5 | 7 | 4 | 873 | 899 | 6 | - | - | - | - | 1 |
| Nev. | 5 | - | - | - | 2,825 | 2,908 | 6 | - | - | - | - | 1 |
| PACIFIC | 661 | 5 | 114 | 8 | 73,994 | 84,839 | 6 | 2 | 2 | 1 | 1 | 74 |
| Wash. | 34 | 2 | 7 | - | 5,534 | 6,666 | - | 1 | 1 | - | 1 | 3 |
| Oreg. | 7 | - | - | - | 4,554 | 4,555 | 4 | 1 | - | 1 | - | 1 |
| Calif. | 607 | U | 105 | 8 | 60,719 | 69,776 | U | U | U | U | U | 55 |
| Alaska | 1 | - | - | - | 1,901 | 2,143 | - | - | 1 | - | - | - |
| Hawaii | 12 | 3 | 2 | - | 1,286 | 1,699 | 2 | - | - | - | - | 15 |
| Guam | - | U | - | - | 95 | 114 | U | U | U | U | U | - |
| P.R. | 33 | U | - | 1 | 2,253 | 1,881 | U | U | U | U | U | 2 |
| V.I. | - | - | - | - | 325 | 188 | - | - | - | - | - | - |
| Pac. Trust Terr. | - | U | - | - | - | - | U | U | U | U | U | - |

N: Not notifiable U: Unavailable

**TABLE III. (Cont'd.) Cases of specified notifiable diseases, United States, weeks ending September 1, 1984 and September 3, 1983 (35th Week)**

| Reporting Area | Malaria | Measles (Rubeola) | | | | | Menin-gococcal Infections | Mumps | | Pertussis | | | Rubella | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Indigenous | | Imported * | | Total | | | | | | | | | |
| | Cum. 1984 | 1984 | Cum. 1984 | 1984 | Cum. 1984 | Cum. 1983 | Cum. 1984 | 1984 | Cum. 1984 | 1984 | Cum. 1984 | Cum. 1983 | 1984 | Cum. 1984 | Cum. 1983 |
| UNITED STATES | 589 | 23 | 1,950 | 1 | 253 | 1,206 | 1,962 | 28 | 2,163 | 14 | 1,276 | 1,525 | 27 | 535 | 758 |
| NEW ENGLAND | 37 | - | 93 | - | 11 | 18 | 117 | 2 | 89 | - | 36 | 47 | - | 18 | 14 |
| Maine | - | - | - | - | - | - | 1 | 2 | 22 | - | 1 | 4 | - | 1 | - |
| N.H. | - | - | 33 | - | 3 | 3 | 7 | - | 15 | - | 6 | 7 | - | 1 | 4 |
| Vt. | 3 | - | 2 | - | 5 | - | 28 | - | 5 | - | 17 | 7 | - | - | 5 |
| Mass. | 21 | - | 48 | - | - | 5 | 42 | - | 10 | - | 10 | 24 | - | 16 | 5 |
| R.I. | 4 | - | - | - | - | - | 11 | - | 8 | - | 1 | 5 | - | - | - |
| Conn. | 9 | - | 10 | - | 3 | 8 | 30 | - | 9 | - | 1 | - | - | - | - |
| MID ATLANTIC | 95 | - | 111 | - | 30 | 93 | 345 | 8 | 253 | 2 | 113 | 284 | 25 | 205 | 134 |
| Upstate N.Y. | 24 | - | 21 | - | 10 | 9 | 119 | 5 | 65 | 2 | 66 | 90 | - | 101 | 25 |
| N.Y. City | 21 | - | 66 | - | 14 | 54 | 75 | 1 | 19 | - | 5 | 48 | 25 | 85 | 86 |
| N.J. | 30 | - | 4 | - | 2 | 27 | 69 | 2 | 130 | - | 6 | 18 | - | 15 | 3 |
| Pa. | 20 | U | - | U | 4 | 3 | 82 | U | 39 | U | 36 | 130 | U | 4 | 20 |
| E.N. CENTRAL | 54 | 15 | 602 | - | 69 | 632 | 315 | 2 | 871 | 7 | 342 | 357 | 1 | 78 | 114 |
| Ohio | 15 | - | 3 | - | 6 | 85 | 108 | - | 432 | 5 | 62 | 105 | - | 2 | 2 |
| Ind. | 1 | - | 2 | - | 1 | 400 | 38 | 1 | 50 | 2 | 222 | 36 | 1 | 3 | 23 |
| Ill. | 19 | 15 | 176 | - | 1 | 139 | 67 | 1 | 162 | - | 21 | 126 | - | 46 | 48 |
| Mich. | 9 | - | 402 | - | 54 | 7 | 60 | - | 157 | - | 21 | 25 | - | 19 | 15 |
| Wis. | 10 | - | 19 | - | 7 | 1 | 42 | - | 70 | - | 16 | 65 | - | 8 | 26 |
| W.N. CENTRAL | 17 | - | 3 | - | 7 | 2 | 119 | 4 | 88 | 1 | 106 | 95 | - | 31 | 31 |
| Minn. | 6 | - | - | - | 3 | 1 | 22 | - | 4 | - | 12 | 33 | - | 2 | 6 |
| Iowa | 1 | - | - | - | - | - | 21 | - | 19 | - | 9 | 5 | - | 1 | - |
| Mo. | 6 | - | 3 | - | - | 1 | 35 | 3 | 9 | - | 16 | 20 | - | - | - |
| N. Dak. | 1 | - | - | - | - | - | 1 | - | 2 | - | - | 1 | - | 3 | - |
| S. Dak. | - | - | - | - | - | - | 6 | - | - | 1 | 8 | 6 | - | - | - |
| Nebr. | 1 | - | - | - | - | - | 11 | - | 4 | - | 11 | - | - | - | - |
| Kans. | 2 | - | - | - | 4 | - | 23 | 1 | 50 | - | 50 | 30 | - | 25 | 25 |
| S. ATLANTIC | 95 | - | 14 | 1 | 28 | 195 | 408 | 8 | 162 | 1 | 107 | 198 | - | 21 | 91 |
| Del. | 4 | - | - | - | - | - | 3 | - | 2 | - | 2 | 3 | - | - | - |
| Md. | 23 | - | 6 | - | 14 | 10 | 32 | 3 | 32 | - | 8 | 25 | - | 1 | 3 |
| D.C. | 1 | - | - | - | 5 | - | 5 | - | - | - | - | - | - | - | - |
| Va. | 25 | - | 1 | - | 2 | 23 | 47 | - | 15 | 1 | 13 | 45 | - | - | 2 |
| W. Va. | 1 | - | - | - | - | - | 5 | 4 | 35 | - | 10 | 7 | - | - | - |
| N.C. | 7 | - | - | - | - | 1 | 60 | - | 17 | - | 21 | 21 | - | - | 10 |
| S.C. | 2 | - | - | - | - | 4 | 43 | - | 4 | - | 1 | 13 | - | - | 1 |
| Ga. | 8 | - | - | 1§ | 1 | 8 | 81 | - | 17 | - | 10 | 57 | - | 2 | 11 |
| Fla. | 24 | - | 7 | - | 6 | 149 | 130 | 1 | 40 | - | 42 | 27 | - | 18 | 64 |
| E.S. CENTRAL | 6 | - | 1 | - | 2 | 6 | 110 | 1 | 42 | 1 | 12 | 21 | - | 9 | 11 |
| Ky. | - | - | 1 | - | - | 1 | 43 | - | 9 | - | 1 | 9 | - | 3 | 10 |
| Tenn. | 2 | - | - | - | 2 | - | 28 | 1 | 13 | 1 | 7 | 4 | - | - | - |
| Ala. | 4 | - | - | - | - | 5 | 26 | - | 6 | - | - | 4 | - | 3 | 1 |
| Miss. | - | - | - | - | - | - | 13 | - | 14 | - | 4 | 4 | - | 3 | - |
| W.S. CENTRAL | 55 | 8 | 487 | - | 23 | 73 | 209 | 2 | 114 | - | 244 | 279 | - | 13 | 98 |
| Ark. | - | - | - | - | - | 12 | 27 | - | 5 | - | 15 | 18 | - | 3 | - |
| La. | 7 | 8 | 8 | - | - | 25 | 44 | - | - | - | 4 | 5 | - | - | 9 |
| Okla. | 8 | - | - | - | 8 | 1 | 23 | N | N | - | 208 | 205 | - | - | - |
| Tex. | 40 | - | 479 | - | 15 | 35 | 115 | 2 | 109 | - | 17 | 51 | - | 10 | 89 |
| MOUNTAIN | 20 | - | 91 | - | 39 | 4 | 67 | - | 205 | 2 | 94 | 157 | - | 16 | 28 |
| Mont. | 1 | - | - | - | - | - | 2 | - | 6 | - | 19 | 1 | - | - | 3 |
| Idaho | 2 | - | - | - | 23 | - | 6 | - | 9 | - | 7 | 11 | - | 1 | 8 |
| Wyo. | - | - | - | - | - | 1 | 2 | - | 2 | - | 3 | 6 | - | 2 | 3 |
| Colo. | 3 | - | - | - | 6 | 2 | 24 | - | 16 | 2 | 34 | 100 | - | 2 | - |
| N. Mex. | 1 | - | 68 | - | 8 | - | 7 | N | N | - | 6 | 9 | - | - | - |
| Ariz. | 9 | U | - | U | - | 1 | 14 | U | 165 | U | 17 | 14 | U | 1 | 6 |
| Utah | 4 | - | 23 | - | 2 | - | 7 | - | 5 | - | 6 | 16 | - | 6 | 7 |
| Nev. | - | - | - | - | - | - | 5 | - | 2 | - | 2 | - | - | 4 | 1 |
| PACIFIC | 210 | - | 548 | - | 44 | 185 | 274 | 1 | 359 | - | 222 | 87 | 1 | 144 | 237 |
| Wash. | 8 | - | 125 | - | 13 | 5 | 42 | - | 36 | - | 58 | 13 | - | 1 | 9 |
| Oreg. | 10 | - | - | - | - | 9 | 40 | N | N | - | 14 | 8 | - | 1 | 13 |
| Calif. | 189 | U | 270 | U | 27 | 168 | 184 | U | 297 | U | 81 | 66 | U | 137 | 213 |
| Alaska | - | - | - | - | - | 2 | 7 | 1 | 8 | - | - | - | - | 1 | 1 |
| Hawaii | 3 | - | 153 | - | 4 | 1 | 1 | - | 18 | - | 69 | 2 | 1 | 4 | 1 |
| Guam | 1 | U | 83 | U | 2 | 2 | 1 | U | 5 | U | - | - | U | 2 | - |
| P.R. | 4 | U | - | U | - | 89 | 3 | U | 107 | U | - | 9 | U | 7 | 4 |
| V.I. | - | - | - | - | - | 5 | - | - | 5 | - | - | - | - | - | 2 |
| Pac. Trust Terr. | - | U | - | U | - | - | - | U | - | U | - | - | U | - | - |

*For measles only, imported cases includes both out-of-state and international importations.

N Not notifiable U Unavailable †International §Out-of-state

**TABLE III. (Cont'd.) Cases of specified notifiable diseases, United States, weeks ending September 1, 1984 and September 3, 1983 (35th Week)**

| Reporting Area | Syphilis (Civilian) (Primary & Secondary) | | Toxic-shock Syndrome | Tuberculosis | | Tula-remia | Typhoid Fever | Typhus Fever (Tick-borne) (RMSF) | Rabies, Animal |
|---|---|---|---|---|---|---|---|---|---|
| | Cum. 1984 | Cum. 1983 | 1984 | Cum. 1984 | Cum. 1983 | Cum. 1984 | Cum. 1984 | Cum. 1984 | Cum. 1984 |
| UNITED STATES | 18,521 | 21,734 | 2 | 14,107 | 15,598 | 213 | 206 | 626 | 3,493 |
| NEW ENGLAND | 350 | 455 | - | 406 | 447 | 4 | 12 | 4 | 33 |
| Maine | 3 | 15 | - | 20 | 28 | - | - | - | 10 |
| N.H. | 13 | 19 | - | 24 | 30 | - | - | - | 10 |
| Vt. | 1 | 1 | - | 9 | 6 | - | - | - | - |
| Mass. | 201 | 279 | - | 213 | 238 | 4 | 10 | 3 | 8 |
| R.I. | 14 | 16 | - | 30 | 32 | - | - | - | - |
| Conn. | 118 | 125 | - | 110 | 115 | - | 2 | 1 | 5 |
| MID ATLANTIC | 2,494 | 2,781 | - | 2,812 | 2,739 | - | 32 | 17 | 261 |
| Upstate N.Y. | 179 | 250 | - | 444 | 416 | - | 12 | 6 | 48 |
| N.Y. City | 1,551 | 1,626 | - | 1,037 | 1,109 | - | 7 | 1 | - |
| N.J. | 457 | 539 | - | 582 | 599 | - | 7 | 3 | 14 |
| Pa. | 307 | 366 | U | 549 | 615 | - | 6 | 7 | 199 |
| E.N. CENTRAL | 876 | 1,175 | - | 1,875 | 2,045 | 6 | 28 | 45 | 154 |
| Ohio | 162 | 300 | - | 355 | 314 | - | 5 | 29 | 15 |
| Ind. | 91 | 87 | - | 211 | 220 | - | 2 | 4 | 17 |
| Ill. | 300 | 572 | - | 759 | 893 | 6 | 10 | 9 | 59 |
| Mich. | 274 | 159 | - | 429 | 510 | - | 4 | 3 | 17 |
| Wis. | 49 | 57 | - | 121 | 108 | - | 7 | - | 46 |
| W.N. CENTRAL | 276 | 283 | - | 446 | 505 | 69 | 6 | 44 | 543 |
| Minn. | 76 | 104 | - | 77 | 103 | 1 | 2 | - | 59 |
| Iowa | 11 | 14 | - | 45 | 45 | - | - | 6 | 113 |
| Mo. | 139 | 99 | - | 228 | 251 | 34 | 3 | 12 | 41 |
| N. Dak. | 10 | 2 | - | 10 | 5 | - | - | - | 115 |
| S. Dak. | - | 9 | - | 17 | 33 | 31 | - | 4 | 133 |
| Nebr. | 11 | 11 | - | 22 | 20 | - | - | 4 | 37 |
| Kans. | 29 | 24 | - | 47 | 48 | 3 | 1 | 18 | 45 |
| S. ATLANTIC | 5,526 | 5,778 | - | 2,971 | 3,157 | 5 | 28 | 297 | 1,033 |
| Del. | 14 | 25 | - | 39 | 25 | - | - | 1 | 4 |
| Md. | 338 | 368 | - | 302 | 248 | - | 3 | 28 | 594 |
| D.C. | 227 | 260 | - | 119 | 127 | - | 6 | - | - |
| Va. | 284 | 401 | - | 317 | 334 | - | 7 | 48 | 158 |
| W. Va. | 13 | 18 | - | 92 | 96 | - | - | 6 | 33 |
| N.C. | 563 | 543 | - | 432 | 472 | 1 | 1 | 110 | 19 |
| S.C. | 519 | 363 | - | 355 | 283 | - | 1 | 69 | 39 |
| Ga. | 931 | 1,057 | - | 429 | 584 | 4 | 1 | 33 | 122 |
| Fla. | 2,637 | 2,743 | - | 886 | 988 | - | 9 | 2 | 64 |
| E.S. CENTRAL | 1,298 | 1,474 | - | 1,296 | 1,409 | 3 | 5 | 60 | 178 |
| Ky. | 73 | 103 | - | 313 | 332 | - | 2 | 10 | 46 |
| Tenn. | 339 | 421 | - | 394 | 442 | 3 | 2 | 32 | 62 |
| Ala. | 419 | 569 | - | 385 | 362 | - | 1 | 11 | 70 |
| Miss. | 467 | 381 | - | 204 | 273 | - | - | 7 | - |
| W.S. CENTRAL | 4,545 | 5,682 | - | 1,621 | 1,902 | 93 | 12 | 145 | 718 |
| Ark. | 126 | 136 | - | 176 | 217 | 68 | - | 25 | 76 |
| La. | 806 | 1,173 | - | 216 | 302 | 7 | 1 | 2 | 44 |
| Okla. | 150 | 146 | - | 157 | 168 | 16 | 2 | 95 | 86 |
| Tex. | 3,463 | 4,227 | - | 1,072 | 1,215 | 2 | 9 | 23 | 512 |
| MOUNTAIN | 416 | 460 | 2 | 363 | 428 | 25 | 10 | 11 | 195 |
| Mont. | 2 | 6 | - | 14 | 34 | 3 | 1 | 8 | 87 |
| Idaho | 18 | 6 | - | 24 | 24 | 6 | - | 1 | 8 |
| Wyo. | 4 | 10 | - | - | 11 | 1 | - | 2 | 12 |
| Colo. | 108 | 106 | - | 42 | 58 | 5 | 2 | - | 31 |
| N. Mex. | 60 | 128 | - | 70 | 83 | 2 | 3 | - | 9 |
| Ariz. | 145 | 114 | U | 168 | 161 | 3 | 3 | - | 34 |
| Utah | 12 | 17 | 2 | 29 | 31 | 3 | - | - | 2 |
| Nev. | 67 | 73 | - | 16 | 26 | 2 | 1 | - | 12 |
| PACIFIC | 2,740 | 3,666 | - | 2,517 | 2,966 | 8 | 73 | 3 | 378 |
| Wash. | 83 | 131 | - | 124 | 159 | 2 | 2 | - | 1 |
| Oreg. | 78 | 94 | - | 110 | 123 | 2 | 1 | 1 | 1 |
| Calif. | 2,523 | 3,383 | U | 2,096 | 2,486 | 4 | 65 | 1 | 369 |
| Alaska | 3 | 10 | - | 43 | 42 | - | 1 | 1 | 7 |
| Hawaii | 53 | 48 | - | 144 | 156 | - | 4 | - | - |
| Guam | - | - | U | 5 | 5 | - | - | - | - |
| P.R. | 537 | 673 | U | 254 | 333 | - | 3 | - | 40 |
| V.I. | 8 | 16 | - | 2 | 2 | - | 3 | - | - |
| Pac. Trust Terr. | - | - | U | - | - | - | - | - | - |

U: Unavailable

## TABLE IV. Deaths in 121 U.S. cities,* week ending September 1, 1984 (35th Week Ending)

| Reporting Area | All Causes, By Age (Years) | | | | | | P&I** Total |
|---|---|---|---|---|---|---|---|
| | All Ages | ≥65 | 45-64 | 25-44 | 1-24 | <1 | |
| NEW ENGLAND | 600 | 407 | 123 | 38 | 16 | 16 | 34 |
| Boston, Mass. | 174 | 101 | 40 | 16 | 7 | 10 | 11 |
| Bridgeport, Conn. | 32 | 21 | 10 | 1 | - | - | 3 |
| Cambridge, Mass. | 19 | 13 | 2 | 3 | 1 | - | - |
| Fall River, Mass. | 34 | 30 | 3 | 1 | - | - | 1 |
| Hartford, Conn. | 53 | 34 | 11 | 5 | 1 | 2 | 3 |
| Lowell, Mass. | 31 | 25 | 4 | - | 2 | - | 1 |
| Lynn, Mass. | 21 | 18 | 2 | - | 1 | - | - |
| New Bedford, Mass. | 20 | 15 | 5 | - | - | - | - |
| New Haven, Conn. | 38 | 26 | 7 | 5 | - | - | 3 |
| Providence, R.I. | 55 | 35 | 15 | 1 | 2 | 2 | 1 |
| Somerville, Mass. | 5 | 3 | 2 | - | - | - | - |
| Springfield, Mass. | 35 | 25 | 7 | 1 | 2 | - | 2 |
| Waterbury, Conn. | 31 | 24 | 5 | 2 | - | - | 6 |
| Worcester, Mass. | 52 | 37 | 10 | 3 | - | 2 | 3 |
| MID. ATLANTIC | 2,458 | 1,574 | 537 | 219 | 64 | 64 | 86 |
| Albany, N.Y. | 66 | 45 | 16 | 3 | 1 | 1 | 1 |
| Allentown, Pa. | 15 | 14 | 1 | - | - | - | - |
| Buffalo, N.Y. | 131 | 92 | 29 | 6 | 3 | 1 | 5 |
| Camden, N.J. | 25 | 16 | 6 | 1 | 1 | 1 | 1 |
| Elizabeth, N.J. | 22 | 19 | 2 | - | - | 1 | 4 |
| E. Pa.† | 38 | 26 | 9 | 3 | - | - | - |
| Jersey City, N.J. | 43 | 25 | 10 | 5 | - | 3 | - |
| N.Y. City, N.Y. | 1,348 | 854 | 291 | 136 | 39 | 28 | 47 |
| Newark, N.J. | 89 | 24 | 24 | 14 | 2 | 5 | 4 |
| Paterson, N.J. | 24 | 17 | 4 | 2 | 1 | - | 1 |
| Philadelphia, Pa.† | 259 | 152 | 57 | 27 | 9 | 14 | 12 |
| Pittsburgh, Pa.† | 57 | 33 | 18 | 4 | 1 | 1 | 2 |
| Reading, Pa. | 26 | 21 | 3 | 2 | - | - | 1 |
| Rochester, N.Y. | 116 | 83 | 20 | 6 | 3 | 4 | 5 |
| Schenectady, N.Y. | 26 | 18 | 7 | - | - | 1 | 1 |
| Scranton, Pa.† | 26 | 20 | 5 | 1 | - | - | - |
| Syracuse, N.Y. | 92 | 63 | 21 | 4 | 2 | 2 | 1 |
| Trenton, N.J. | 38 | 26 | 11 | 1 | - | - | - |
| Utica, N.Y. | 16 | 10 | 2 | 1 | 2 | 1 | - |
| Yonkers, N.Y. | 21 | 16 | 1 | 3 | - | 1 | 1 |
| E.N. CENTRAL | 2,093 | 1,421 | 388 | 144 | 65 | 75 | 84 |
| Akron, Ohio | 61 | 55 | 15 | 4 | 3 | 4 | - |
| Canton, Ohio | 32 | 21 | 6 | 3 | 2 | - | 2 |
| Chicago, Ill. § | 481 | 407 | 3 | 7 | 14 | 10 | 9 |
| Cincinnati, Ohio | 96 | 59 | 25 | 5 | 2 | 5 | 9 |
| Cleveland, Ohio | 162 | 79 | 33 | 38 | 5 | 7 | 4 |
| Columbus, Ohio | 124 | 80 | 26 | 10 | 5 | 3 | 5 |
| Dayton, Ohio | 103 | 74 | 22 | 2 | 2 | 3 | 2 |
| Detroit, Mich. | 266 | 141 | 75 | 32 | 9 | 9 | 4 |
| Evansville, Ind. | 41 | 29 | 8 | 1 | 1 | 2 | 1 |
| Fort Wayne, Ind. | 61 | 42 | 12 | - | 3 | 4 | 3 |
| Gary, Ind. | 20 | 9 | 8 | 2 | - | 1 | - |
| Grand Rapids, Mich. | 66 | 46 | 10 | 4 | 1 | 5 | 2 |
| Indianapolis, Ind. | 162 | 117 | 28 | 12 | 1 | 4 | 5 |
| Madison, Wis. | 29 | 14 | 7 | 2 | 3 | 3 | 2 |
| Milwaukee, Wis. | 115 | 79 | 25 | 3 | - | 8 | 3 |
| Peoria, Ill. | 45 | 29 | 9 | 5 | 1 | 1 | 3 |
| Rockford, Ill. | 48 | 33 | 8 | 3 | 2 | 2 | 3 |
| South Bend, Ind. | 22 | 14 | 6 | 2 | - | - | 4 |
| Toledo, Ohio | 98 | 55 | 26 | 6 | 9 | 2 | 3 |
| Youngstown, Ohio | 61 | 38 | 16 | 3 | 2 | 2 | - |
| W.N. CENTRAL | 720 | 481 | 150 | 42 | 22 | 25 | 19 |
| Des Moines, Iowa | 47 | 24 | 12 | 4 | 3 | 4 | 4 |
| Duluth, Minn. | 38 | 30 | 6 | 2 | - | - | - |
| Kansas City, Kans. | 37 | 21 | 8 | 5 | 2 | 1 | 1 |
| Kansas City, Mo. | 112 | 79 | 18 | 9 | 4 | 2 | 1 |
| Lincoln, Nebr. | 22 | 14 | 6 | 1 | 1 | - | - |
| Minneapolis, Minn. | 93 | 65 | 14 | 6 | 2 | 7 | 2 |
| Omaha, Nebr. | 100 | 61 | 30 | 4 | 1 | 4 | 8 |
| St. Louis, Mo. | 141 | 97 | 28 | 8 | 2 | 6 | 2 |
| St. Paul, Minn. | 55 | 43 | 11 | - | 1 | - | 1 |
| Wichita, Kans. | 75 | 47 | 17 | 4 | 8 | 1 | - |
| S. ATLANTIC | 1,171 | 695 | 301 | 101 | 32 | 42 | 47 |
| Atlanta, Ga. | 126 | 74 | 34 | 14 | 3 | 1 | 3 |
| Baltimore, Md. | 133 | 89 | 30 | 8 | 3 | 3 | 1 |
| Charlotte, N.C. | 65 | 38 | 15 | 7 | 5 | - | 2 |
| Jacksonville, Fla. | 108 | 63 | 30 | 10 | 4 | 1 | 9 |
| Miami, Fla. | 139 | 78 | 48 | 10 | - | 3 | 1 |
| Norfolk, Va. | 59 | 33 | 14 | 3 | 1 | 8 | 2 |
| Richmond, Va. | 68 | 46 | 19 | 1 | - | 2 | 6 |
| Savannah, Ga. | 37 | 22 | 7 | 6 | 1 | 1 | 2 |
| St. Petersburg, Fla. | 92 | 77 | 9 | 4 | - | 2 | 9 |
| Tampa, Fla. | 60 | 37 | 15 | 5 | - | 3 | 4 |
| Washington, D.C. | 248 | 117 | 70 | 30 | 13 | 18 | 5 |
| Wilmington, Del. | 36 | 21 | 10 | 3 | 2 | - | 3 |
| E.S. CENTRAL | 667 | 397 | 164 | 59 | 28 | 21 | 34 |
| Birmingham, Ala. | 121 | 60 | 41 | 9 | 6 | 5 | 1 |
| Chattanooga, Tenn. | 62 | 36 | 18 | 5 | 3 | - | 3 |
| Knoxville, Tenn. | 63 | 41 | 13 | 4 | 2 | 3 | 7 |
| Louisville, Ky. | 98 | 53 | 20 | 4 | 4 | 5 | 5 |
| Memphis, Tenn. | 153 | 95 | 35 | 14 | 6 | 3 | 5 |
| Mobile, Ala. | 45 | 22 | 11 | 5 | 4 | 3 | 2 |
| Montgomery, Ala. | 39 | 28 | 7 | 3 | - | 1 | 6 |
| Nashville, Tenn. | 98 | 62 | 19 | 15 | 1 | 1 | 5 |
| W.S. CENTRAL | 1,236 | 709 | 327 | 95 | 57 | 48 | 31 |
| Austin, Tex. | 54 | 31 | 11 | 7 | 1 | 4 | 6 |
| Baton Rouge, La. | 52 | 32 | 12 | 4 | 1 | 3 | - |
| Corpus Christi, Tex. | 36 | 28 | 6 | 2 | - | - | - |
| Dallas, Tex. | 186 | 105 | 45 | 21 | 8 | 7 | 1 |
| El Paso, Tex. | 74 | 46 | 14 | 6 | 4 | 4 | 4 |
| Fort Worth, Tex. | 98 | 50 | 34 | 4 | 5 | 5 | - |
| Houston, Tex. | 296 | 157 | 83 | 25 | 22 | 9 | 6 |
| Little Rock, Ark. | 57 | 38 | 13 | 2 | - | 4 | 4 |
| New Orleans, La. | 119 | 71 | 37 | 5 | 3 | 3 | 1 |
| San Antonio, Tex. | 139 | 74 | 36 | 15 | 9 | 5 | 6 |
| Shreveport, La. | 41 | 26 | 13 | - | - | 2 | 1 |
| Tulsa, Okla. | 84 | 51 | 23 | 4 | 4 | 2 | 2 |
| MOUNTAIN | 588 | 380 | 126 | 47 | 25 | 30 | 24 |
| Albuquerque, N.Mex. | 79 | 42 | 22 | 6 | 3 | 6 | 3 |
| Colo. Springs, Colo. | 23 | 15 | 4 | 2 | 1 | 1 | 1 |
| Denver, Colo. | 109 | 66 | 20 | 12 | 6 | 5 | 7 |
| Las Vegas, Nev. | 65 | 37 | 20 | 6 | - | 2 | 1 |
| Ogden, Utah | 18 | 10 | 7 | - | 1 | - | - |
| Phoenix, Ariz. | 140 | 94 | 28 | 8 | 5 | 7 | 4 |
| Pueblo, Colo. | 24 | 15 | 5 | 1 | 3 | - | 2 |
| Salt Lake City, Utah | 48 | 23 | 10 | 5 | 4 | 6 | - |
| Tucson, Ariz. | 82 | 56 | 12 | 7 | 2 | 3 | 6 |
| PACIFIC | 1,931 | 1,268 | 405 | 186 | 41 | 57 | 95 |
| Berkeley, Calif. § | 17 | 17 | - | - | - | - | - |
| Fresno, Calif. | 68 | 41 | 15 | 4 | 4 | 4 | 8 |
| Glendale, Calif. | 37 | 29 | 3 | 3 | - | - | 1 |
| Honolulu, Hawaii | 64 | 38 | 17 | 7 | - | 2 | 6 |
| Long Beach, Calif. | 99 | 75 | 16 | 5 | 2 | 1 | 14 |
| Los Angeles, Calif. | 581 | 380 | 119 | 56 | 15 | 9 | 21 |
| Oakland, Calif. | 55 | 33 | 10 | 5 | 3 | 4 | 2 |
| Pasadena, Calif. | 27 | 18 | 5 | 2 | - | 2 | 1 |
| Portland, Oreg. | 135 | 96 | 23 | 11 | 3 | 2 | 7 |
| Sacramento, Calif. | 132 | 92 | 29 | 7 | 1 | 3 | 4 |
| San Diego, Calif. | 132 | 85 | 25 | 14 | 4 | 4 | 8 |
| San Francisco, Calif. | 150 | 96 | 31 | 15 | 1 | 7 | 3 |
| San Jose, Calif. | 177 | 95 | 59 | 12 | 4 | 7 | 11 |
| Seattle, Wash. | 121 | 74 | 30 | 7 | 2 | 8 | 4 |
| Spokane, Wash. | 62 | 41 | 11 | 5 | 2 | 3 | 2 |
| Tacoma, Wash. | 74 | 58 | 12 | 3 | - | 1 | 3 |
| TOTAL | 11,464†† | 7,312 | 2,501 | 901 | 348 | 378 | 434 |

* Mortality data in this table are voluntarily reported from 121 cities in the United States, most of which have populations of 100,000 or more. A death is reported by the place of its occurrence and by the week that the death certificate was filed. Fetal deaths are not included.

** Pneumonia and influenza.

† Because of changes in reporting methods in these 4 Pennsylvania cities, these numbers are partial counts for the current week. Complete counts will be available in 4 to 6 weeks.

†† Total includes unknown ages.

§ Data not available. Figures are estimates based on average of past 4 weeks.

*Measles — Continued*

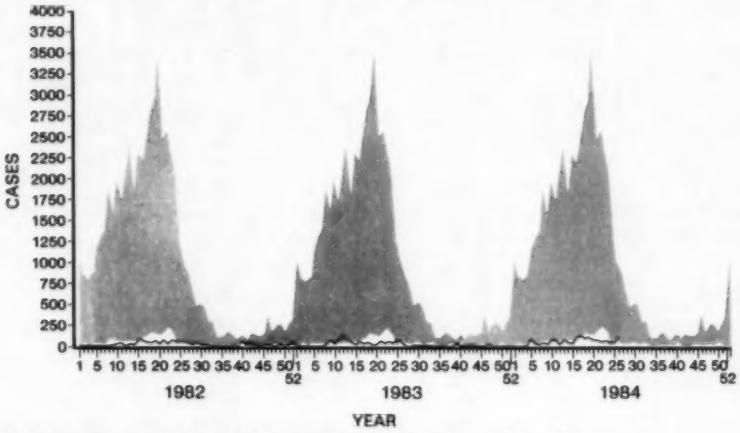
were 12-14 months of age; 18 (5.1%) were 15 months; and 173 (49.3%) were 16 months to 4 years of age. Persons 12-14 months of age accounted for 3.9% of the 1,765 cases.

Of the 1,765 persons with measles, 911 (51.6%) had been vaccinated; 776 (44.0%) had been vaccinated on or after the first birthday; and 135 (7.6%) had been vaccinated before the first birthday (Table 3). A total of 854 (48.4%) persons were either unvaccinated or of unknown vaccination status. Prior physician-diagnosed measles in the absence of vaccination was reported for 21 (1.2%) persons.

Of the 1,765 cases, 610 (34.6%) were classified as preventable† (*1*) (Table 4). The highest proportion of preventable cases occurred among persons who were not of school age. More than 70% of the cases among children 16 months to 4 years and adults 20-24 years were preventable. Although more than half of the preventable cases occurred among persons 5-19 years of age, only 29.5% of cases occurring in that age group were considered preventable. The proportion of preventable cases in this age group increased progressively with increasing age.

†A case is considered preventable if measles occurs in a U.S. citizen: (1) at least 16 months of age, (2) born after 1956, (3) lacking adequate evidence of immunity to measles (documented receipt of live measles vaccine on or after the first birthday and at least 2 weeks before onset of illness, or a physician-diagnosed measles or laboratory evidence of immunity), (4) without a medical contraindication to receiving vaccine, and (5) with no religious or philosophic exemption under state law.

**FIGURE 1. Reported measles cases* — United States, 1982-1984**




*Shaded area represents maximum and minimum weekly values during 5-year period, 1977-1981.

Source: *MMWR* weekly reports.

**TABLE 1. Geographic distribution and incidence rates* of measles cases — United States, first 26 weeks, 1983 and 1984**

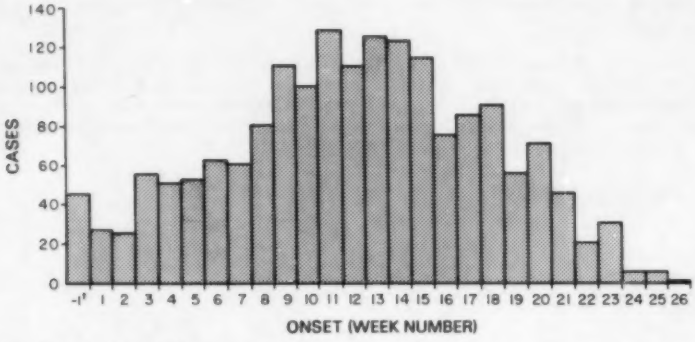
| | 1983 | 1984 |
|---|---|---|
| No. cases | 1,095 | 1,759 |
| Incidence rate† | 0.5 | 0.8 |
| States without measles | 22 | 24 |
| Counties without measles | 3,044 (97.0%) | 3,059 (97.5%) |

*Provisional data. †Per 100,000 population.

*Measles – Continued*

Of the 1,155 persons who had nonpreventable measles, 178 (15.4%) were too young for routine vaccination (15 months of age or under). Fifty-seven (4.9%) were born before 1957; vaccination is not ordinarily recommended for this group. Of the 920 persons 16 months to 27 years of age who acquired measles, 775 (84.2%) had been vaccinated on or after the first birthday; 18 (2.0%) had prior physician-diagnosed measles; 32 (3.5%) had international importations and were not U.S. citizens; and 41 (4.5%) had exemptions under state law. In addition, 54 (5.9%) persons—recruits at Great Lakes Naval Training Station—were considered immune because they had positive results to an indirect immunoperoxidase assay for measles antibody before their illnesses (Table 5).

**FIGURE 2. Reported measles cases, by week of rash onset* – United States, first 26 weeks, 1984**




*No dates of rash onset reported for seven patients.
†Rash onset in 1983.

**TABLE 2. Age distribution and estimated incidence rates* of measles cases† – United States, 1983 and first 26 weeks, 1984**

| Age group | 1983 (52 weeks)§ | | | 1984 (26 weeks)¶ | | |
|---|---|---|---|---|---|---|
| | No. | % | Rate | No. | % | Rate |
| 0-4 yrs. | 451 | 31.5 | 2.6 | 351 | 19.9 | 2.0 |
| 5-9 yrs. | 160 | 11.2 | 1.0 | 201 | 11.4 | 1.3 |
| 10-14 yrs. | 195 | 13.6 | 1.1 | 515 | 29.2 | 2.9 |
| 15-19 yrs. | 382 | 26.7 | 2.1 | 470 | 26.6 | 2.4 |
| 20-24 yrs. | 163 | 11.4 | 0.8 | 137 | 7.8 | 0.6 |
| ≥ 25 yrs. | 80 | 5.6 | 0.1 | 91 | 5.1 | 0.1 |
| Total age known | 1,431 | 95.6 | – | 1,765 | 100.0 | – |
| Total age unknown | 66 | 4.4 | – | – | – | – |
| **Total** | **1,497** | **100.0** | **0.6** | **1,765** | **100.0** | **0.8** |

*Cases per 100,000 population extrapolating cases with known age to total reported cases.
†Provisional data.
§Total cases reported to the *MMWR* in 1983.
¶Total cases reported to CDC's Division of Immunization during the first 26 weeks of 1984.

*Measles — Continued*

*Reported by N El-Tantawy, MD, Emory University School of Medicine, Atlanta, Georgia; Div of Immunization, Center for Prevention Svcs, CDC.*

**Editorial Note:** Although the number of reported measles cases has increased in 1984, compared with the same period in 1983, it is still far below the number in the prevaccine era (1950-1962), when an average of over 525,000 cases was reported annually. Despite the increased occurrence of measles during the first 26 weeks of 1984 over all of 1983, the geographic distribution of measles is more restricted and focal.

A total of 43.9% of the persons who had measles in 1984 had been adequately vaccinated. This is within expected limits, given the high vaccine coverage in the United States (*2*). Since 1980, over 95% of kindergarten and first-grade students have had evidence of measles immunity. Higher coverage will be associated with higher proportions of persons who are vaccinated. Recent epidemiologic evaluations have shown a measles vaccine efficacy of 90% or higher. The increased occurrence of measles in 1984 does not appear to be due to poor vaccine efficacy.

Greater emphasis needs to be placed on ensuring that persons 10-14 years old and 15-19 years old have evidence of measles immunity (*3*). Enactment and vigorous enforcement of regulations requiring all students in grades kindergarten through 12 to have evidence of immunity is an important means of ensuring high levels of measles immunity (*2*).

Further efforts need to be made in preschool- and post-school-aged groups. Over 70% of the cases among young adults (20-24 years old) and preschoolers (16 months to 4 years old)

**TABLE 3. Age at most recent measles vaccination — United States, first 26 weeks, 1984***

| Age at vaccination | Measles cases | |
|---|---|---|
| | No. | % |
| < 12 months | 135 | 7.6 |
| 12-14 months | 255 | 14.4 |
| 15 months | 34 | 1.9 |
| 16 months-4 years | 303 | 17.2 |
| 5-9 years | 139 | 7.9 |
| 10-14 years | 32 | 1.8 |
| 15-19 years | 8 | 0.5 |
| ≥ 20 years | 2 | 0.1 |
| > 12 months† | 3 | 0.2 |
| Unvaccinated or unknown | 854 | 48.4 |
| **Total** | **1,765** | **100.0** |

*Provisional data. †Unknown age at vaccination, definitely older than 12 months.

**TABLE 4. Age distribution and preventability of measles cases — United States, first 26 weeks, 1984***

| Age group | No. cases | No. preventable (%) | No. nonpreventable (%) |
|---|---|---|---|
| ≤ 15 mos. | 178 | 0 (0%) | 178 (100.0%) |
| 16 mos.-4 yrs. | 173 | 127 (73.4%) | 46 (26.6%) |
| 5-9 yrs. | 201 | 43 (21.4%) | 158 (78.6%) |
| 10-14 yrs. | 515 | 137 (26.6%) | 378 (73.4%) |
| 15-19 yrs. | 470 | 170 (36.2%) | 300 (63.8%) |
| 20-24 yrs. | 137 | 106 (77.4%) | 31 (22.6%) |
| 25-29 yrs. | 51 | 27 (52.9%) | 24 (47.0%) |
| ≥ 30 yrs. | 40 | 0 (0%) | 40 (100.0%) |
| **Total** | **1,765** | **610 (34.6%)** | **1,155 (65.4%)** |

*Provisional data.

*Measles — Continued*

were preventable. Every opportunity should be taken to vaccinate susceptible children against measles. Many colleges are considering regulations requiring evidence of measles immunity for matriculation (*4*). All institutions where young adults congregate should consider requiring evidence of measles immunity.

*References*

1. CDC. Classification of measles cases and categorization of measles elimination programs. MMWR 1982;31:707-11.
2. CDC. Measles Surveillance Report No. 11, 1977-1981. September 1982.
3. ACIP. Measles prevention. MMWR 1982;31:217-24, 229-31.
4. American College Health Association. Statement of immunization policy. November 25, 1983;1-3.

**TABLE 5. Reasons measles cases were classified as nonpreventable — United States, first 26 weeks, 1984***

| Causes of nonpreventability | | | No. cases (%) | Total cases (%)† |
|---|---|---|---|---|
| 1. | Persons < 16 months of age (too young for routine vaccination) | | 178 (15.4%) | (10.1%) |
| 2. | Born before 1957 (vaccination is not routinely recommended) | | 57 (4.9%) | (3.2%) |
| 3. | Persons 16 months-27 years | | 920 (79.7%) | (52.1%) |
| | a. Adequately vaccinated (on or after the first birthday) | 775 (84.2%)§ | | |
| | b. Prior physician diagnosis | 18 (2.0%) | | |
| | c. International importations (non-U.S. citizens) | 32 (3.5%) | | |
| | d. Exemptions | 41 (4.5%) | | |
| | 1. Medical | 4 (10%) | | |
| | 2. Religious | 16 (39%) | | |
| | 3. Philosophic | 16 (39%) | | |
| | 4. Nonspecified exemptions | 5 (12%) | | |
| | e. Laboratory evidence of immunity | 54 (5.9%) | | |
| **Total** | | | **1,155 (100.0%)** | **(65.4%)** |

*Provisional data. †1,765 cases.

§Does not include one adequately vaccinated person who was born before 1957.

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